



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,359	11/14/2003	Dennis Lazaroff	200208808-1	9150

22879 7590 12/20/2006  
HEWLETT PACKARD COMPANY  
P O BOX 272400, 3404 E. HARMONY ROAD  
INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

EXAMINER
----------

ONEILL, KARIE AMBER

ART UNIT	PAPER NUMBER
----------	--------------

1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/20/2006	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/713,359	LAZAROFF, DENNIS
	Examiner Karie O'Neill	Art Unit 1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 10 October 2006.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-29 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date: _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date: _____	6) <input type="checkbox"/> Other: _____

**DETAILED ACTION**

1. Applicant's amendments, filed October 10, 2006, have been received. Claims 1, 7, 8, 16, and 21 have been amended. Claims 2 and 18 have been cancelled.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on July 12, 2006.

***Claim Rejections - 35 USC § 102***

3. The Claim rejections under 35 U.S.C. 102(e) as being anticipated by Mardilovich et al. (US 2004/0081878) with regard to Claims 1-4, 6-10, 12-14 and 16-19 and Thirukkvalur (US 2005/0048343) with regard to Claims 1, 2, 6-8, 21 and 25-29 are withdrawn, because the independent Claims 1, 7, 16 and 21 have been amended.
4. Claims 1, 3-4, 6, 7-10, 12-14, 16-17, 19, 21-23, and 25-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Lazaroff et al. (US 2004/0086754 A1).

With regard to Claim 1, Lazaroff et al. disclose in Figure 2, a dual chamber fuel cell (paragraph 0050), comprising a dual chamber fuel cell stack layer comprising anode (16), cathode (18) and electrolyte (20) materials deposited on one side of a surface (14) which may be a substrate (26), anode (14), cathode (18) electrolyte (20) and/or current collector (28); wherein at least the anode and cathode materials of the fuel cell stack layer have peaks and valleys (as can be seen in the figure) thereby defining passageways (30) between the stack and substrate (paragraph 0049).

With regard to Claims 3-4, Lazaroff et al. disclose the stack comprising a thickness equal to or less than 50 $\mu$ m and equal to or less than 20 $\mu$ m. In paragraph 0052 it is disclosed that each of the anode layer, the cathode layer and the electrolyte layer has a thickness ranging between about 0.5 $\mu$ m and 1000 $\mu$ m which means that at the smallest the stack would be 1.5 $\mu$ m.

With regard to Claim 6, Lazaroff et al. disclose, in Figure 8, the dual chamber fuel cell further comprising a current collector (28).

With regard to Claim 7, Lazaroff et al. disclose in Figure 2, a dual chamber fuel cell element (paragraph 0050) having a supported fuel cell stack (10) having at least an anode material formed into peaks and valleys that thereby define integrated flow passageways (30) between the fuel cell stack and the support (14) (paragraph 0049), which may be a substrate (26), anode (14), cathode (18) electrolyte (20) and/or current collector (28).

With regard to Claim 8, Lazaroff et al. disclose in Figure 2 and paragraph 0039, the stack also comprising an electrolyte layer (20) and a cathode layer (18).

With regard to Claims 9-10, Lazaroff et al. disclose the stack comprising a thickness equal to or less than 50 $\mu$ m and equal to or less than 20 $\mu$ m. In paragraph 0052 it is disclosed that each of the anode layer, the cathode layer and the electrolyte layer has a thickness ranging between about 0.5 $\mu$ m and 1000 $\mu$ m which means that at the smallest the stack would be 1.5 $\mu$ m.

With regard to Claim 12, Lazaroff et al. disclose in Figure 2, a dual chamber fuel cell (paragraph 0050), comprising a dual chamber fuel stack layer comprising anode

(16), cathode (18) and electrolyte (20) materials deposited on one side of a surface (14) which may be a substrate (26), anode (14), cathode (18) electrolyte (20) and/or current collector (28); and a means for passing a separated fuel stream to the anode (16) through a first passageways (30) and an oxygen stream to the cathode (18) through a second passageway (32) on the same side of the substrate (14); wherein the fuel stream and the oxygen containing stream remain separated when exposed to the stack (paragraph 0050).

With regard to Claims 13-14, Lazaroff et al. disclose the stack comprising a thickness equal to or less than 50 $\mu$ m and equal to or less than 20 $\mu$ m. In paragraph 0052 it is disclosed that each of the anode layer, the cathode layer and the electrolyte layer has a thickness ranging between about 0.5 $\mu$ m and 1000 $\mu$ m which means that at the smallest the stack would be 1.5 $\mu$ m.

With regard to Claims 16 and 17, Lazaroff et al. disclose in Figure 2, a fuel cell element (10) (paragraph 0050), comprising a fuel cell stack comprising anode (16), cathode (18) and electrolyte (20) materials deposited on one side of a surface (14) which may be a substrate (26), anode (14), cathode (18) electrolyte (20) and/or current collector (28); wherein at least the anode and cathode materials of the fuel cell stack layer have peaks and valleys (as can be seen in the figure) thereby defining passageways (30) between the stack and substrate (paragraph 0049), and wherein the stack comprises a thickness of equal to or less than 50 $\mu$ m. In paragraph 0052 it is disclosed that each of the anode layer, the cathode layer and the electrolyte layer has a

thickness ranging between about 0.5 $\mu$ m and 1000 $\mu$ m which means that at the smallest the stack would be 1.5 $\mu$ m.

With regard to Claim 19, Lazaroff et al. disclose the stack comprising a thickness equal to or less than 20 $\mu$ m. In paragraph 0052 it is disclosed that each of the anode layer, the cathode layer and the electrolyte layer has a thickness ranging between about 0.5 $\mu$ m and 1000 $\mu$ m which means that at the smallest the stack would be 1.5 $\mu$ m.

With regard to Claims 21 and 25, Lazaroff et al. disclose a fuel cell comprising one or more fuel cell elements (paragraph 0057) wherein the fuel cell elements comprise a dual chamber fuel cell stack layer comprising anode (16), cathode (18) and electrolyte (20) materials deposited on one side of a surface (14) which may be a substrate (26), anode (14), cathode (18) electrolyte (20) and/or current collector (28); wherein at least the cathode materials of the fuel cell stack layer have peaks and valleys (as can be seen in the figure) thereby defining passageways (30) between the stack and substrate (paragraph 0049). Lazaroff et al. do not disclose a fuel cell housing, however, it is the position of the Examiner that other properties of said fuel cell system, such as a housing, are inherent, given that the fuel cell elements disclosed by Lazaroff et al. and the present application have a similar structure. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. Inherency is not established by probabilities or possibilities. *In re Robertson*, 49 USPQ2d 1949 (1999). Applicant is advised to submit other information with respect to the Lazaroff et al. fuel cell housing, if it is to be patentably distinct from the instant invention.

With regard to Claims 22-23, Lazaroff et al. disclose the stack comprising a thickness equal to or less than 50 $\mu$ m and equal to or less than 20 $\mu$ m. In paragraph 0052 it is disclosed that each of the anode layer, the cathode layer and the electrolyte layer has a thickness ranging between about 0.5 $\mu$ m and 1000 $\mu$ m which means that at the smallest the stack would be 1.5 $\mu$ m.

With regard to Claims 26-29, Lazaroff et al. disclose that either anode (16) or cathode (18) may be exposed to the first gas flow passage (30) and a second gas flow passage (32) (paragraph 0049). The gas flow passages carry reactants, which are fuels and oxidants, which are one of oxygen and air (paragraph 0051).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5, 11, 15, 20, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lazaroff et al. (US 2004/0086754 A1), as applied to Claims 1, 3-4, 6, 7-10, 12-14, 16-17, 19, 21-23, and 25-29 above.

Lazaroff et al. disclose the dual chamber fuel cell and fuel cell element in paragraph 4 above, but do not disclose wherein the stack comprises a thickness of equal to or less than 1 $\mu$ m. However, Lazaroff et al. recognizes that the desired combination thickness layers of the anode, cathode and electrolyte generally depend

upon the mechanical properties of the system (paragraph 0052), therefore it would have been within the skill of the ordinary artisan to adjust the thickness of the anode layer, the cathode layer and/or the electrolyte layer as long as the mechanical strength requirements can be met. Discovery of an optimum value of a result effective variable in known process is ordinarily within the skill of the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karie O'Neill whose telephone number is (571) 272-8614. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Karie O'Neill  
Examiner  
Art Unit 1745

KAO



DAH-WEIYUAN  
PRIMARY EXAMINER